

### **AMENDMENTS TO THE CLAIMS**

*The listing of claims will replace all prior versions and listings of claims in the application:*

#### **Listing of Claims:**

1. **(Currently Amended)** A vertical cavity surface emitting laser (VCSEL) comprising:

a first mirror;

an active area situated ~~on~~ above said first mirror;

a dielectric ~~gain guide layer~~ situated above ~~on~~ said active area and defining an electrically confining aperture, the dielectric layer comprising a non-aluminum dielectric material; and, ~~wherein the dielectric gain is deposited on the active area according to a pattern in order to form an aperture in the dielectric gain guide; and~~

a second mirror above ~~situated on~~ said dielectric gain guide.

2. **(Currently Amended)** The VCSEL of claim 1, further comprising:

a substrate; and

wherein said first mirror is situated ~~on~~ above said substrate; and

said substrate comprises InP.

3. **(Currently Amended)** The VCSEL of claim 2, wherein said non-aluminum dielectric gain guide is for current confinement. material provides optical confinement.

4. **(Currently Amended)** The VCSEL of claim 3, wherein said non-aluminum dielectric gain guide material is selected from the group consisting of ~~comprises a material selected from a group of~~ SiO<sub>2</sub>, TiO<sub>2</sub>, and SiN, and combinations thereof.

5. **(Currently Amended)** The VCSEL of claim 1, further comprising:

a substrate; and

wherein:

said mirror is situated ~~on~~above said substrate; and  
said substrate comprises GaAs.

6. **(Currently Amended)** The VCSEL of claim 5, wherein said non-aluminum dielectric gain guide is for current confinement material provides optical confinement.

7. **(Currently Amended)** The VCSEL of claim 6, wherein said non-aluminum dielectric gain guide comprises a material is selected from at the group consisting of SiO<sub>2</sub>, TiO<sub>2</sub>, and SiN, and combinations thereof.

8. **(Currently Amended)** A method for making a gain guide for a VCSEL comprising:

forming a first mirror ~~on~~above a substrate;  
forming an active region ~~on~~above said first mirror;  
~~forming a dielectric gain guide on said active region;~~  
depositing a mask and a dielectric material above the active region, wherein the mask provides a pattern for forming an aperture in the dielectric material;  
~~masking the dielectric gain guide with a mask in order to pattern the dielectric gain guide for an aperture;~~  
forming an aperture in the dielectric material gain guide according to the mask so as to form a dielectric gain guide; and  
forming a second mirror ~~on~~above said dielectric gain guide.

9. **(Currently Amended)** The method of claim 8, wherein the dielectric ~~gain guide comprises a material~~ comprises at least one of selected from a group of SiO<sub>2</sub>, TiO<sub>2</sub>, and or SiN, and wherein masking the dielectric gain guide further comprises one of:  
———forming the aperture using a lift off technique; or  
———etching the aperture..

10. **(Currently Amended)** The method of claim 98, wherein the first and second mirrors are distributed Bragg reflectors.

11. **(Original)** The method of claim 10, wherein the first mirror is at least nearly lattice matched to the substrate.

12. **(Original)** The method of claim 11, wherein the substrate comprises InP.

13. **(Original)** The method of claim 11, wherein the substrate comprises GaAs.

14. **(Currently Amended)** A vertical cavity surface emitting laser for providing laser light comprising:

first reflecting means, situated ~~on~~above a substrate, for reflecting light;

active means, situated ~~on~~above said first reflecting means, for converting current to light;

confinement means, situated ~~on~~above said active means, for confining current, wherein the confinement means is ~~patterned with a mask in order to form an aperture therein~~ comprises a dielectric material selected from the group consisting of SiO<sub>2</sub>, TiO<sub>2</sub>, SiN, and combinations thereof; and

second reflecting means, situated ~~on~~above said confinement means, for reflecting light.

15. **(Previously Presented)** The vertical cavity surface emitting laser of claim 14, wherein said first means for reflecting comprises first distributed Bragg reflector layers including one or more materials that are at least nearly lattice matched with the substrate and wherein said second reflecting means comprises second distributed Bragg reflector layers.

16. **(Previously Presented)** The vertical cavity surface emitting laser of claim 15, wherein said active means is at least nearly lattice matched with said first means for reflecting.

17. **(Currently Amended)** The vertical cavity surface emitting laser of claim 16, wherein the substrate comprises InP ~~and the dielectric comprises at least one of SiO<sub>2</sub>, TiO<sub>2</sub>, or SiN.~~

18. **(Currently Amended)** The vertical cavity surface emitting laser of claim 16, wherein the substrate comprises GaAs ~~and the dielectric comprises at least one of SiO<sub>2</sub>, TiO<sub>2</sub>, or SiN.~~

19. **(Currently Amended)** A method for manufacturing a laser source comprising:  
forming a first reflector;  
forming a cavity situated ~~on~~ above said first reflector;  
forming a layer of dielectric, having an opening formed therein, the layer of dielectric formed using a dielectric deposition process, the layer of dielectric situated ~~on~~ above said cavity;  
forming a second reflector situated ~~on~~ above said layer, wherein the first reflector, the cavity and the second reflector are formed using an epitaxial growth process.

20. **(Currently Amended)** The ~~source~~ method of claim 19~~24~~, wherein said first reflector is situated on a substrate.

21. **(Currently Amended)** The ~~source~~ method of claim 20, wherein said first reflector is at least nearly lattice matched with the substrate.

22. **(Currently Amended)** The ~~source~~ method of claim 21, wherein the laser source has an InP based structure.

23. **(Currently Amended)** The ~~source~~ method of claim 21, wherein the laser source has a GaAs based structure.

24. **(Currently Amended)** The ~~source~~ method of claim 21~~19~~, wherein said layer comprises at least one material selected from of a group of SiO<sub>2</sub>, TiO<sub>2</sub>, and SiN.

25. **(New)** A method as in claim 8 wherein the aperture is formed using a lift off technique.

26. **(New)** A method as in claim 8 wherein the aperture is formed by etching a portion of the dielectric material.

27. **(New)** A semiconductor laser manufactured according to the method of claim 19.

28. **(New)** A semiconductor laser as in claim 27, wherein said layer comprises at least one material selected from the group consisting of SiO<sub>2</sub>, TiO<sub>2</sub>, SiN, and combinations thereof.